

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 1. (currently amended): A magnetic head including a spin valve sensor comprising:
2 a magnetic shield layer (S1) being fabricated above a substrate base;
3 a first electrical insulation layer (G1) being fabricated above said S1 layer;
4 a spin valve sensor structure being disposed above said G1 layer;
5 wherein said spin valve sensor structure includes a seed layer being fabricated above said
6 G1 layer, a PtMn layer being disposed above said seed layer and at least one pinned magnetic
7 layer and at least one free magnetic layer being disposed above said PtMn layer; and
8 wherein said seed layer includes an Al₂O₃ sublayer, an NiMnO sublayer, and an Si
9 sublayer, and wherein said PtMn layer is disposed upon said Si sublayer.

1 2. (original): A magnetic head as described in claim 1 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 10 to 40 Å.

1 3. (original): A magnetic head as described in claim 1 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 20 Å.

1 4. (original): A magnetic head as described in claim 2 wherein said PtMn layer has a
2 thickness of approximately 120 Å.

5. (original): A magnetic head as described in claim 1 wherein said Si seed sublayer is fabricated to have a thickness of approximately 20 Å and said PtMn layer has a thickness of approximately 120 Å.

6. (original): A magnetic head as described in claim 5 wherein said spin valve sensor layers include at least one pinned magnetic layer having a composition including CoFe and at least one spacer layer having a composition including Cu, and at least one free magnetic layer having a composition including Co or CoFe.

7. (currently amended): A magnetic head as described in claim 1 wherein said Si sublayer has an upper surface having a crystallographic surface that differs from the crystallographic surface of a deposited Si sublayer.

8. (currently amended): A magnetic head including a spin valve sensor comprising:
a magnetic shield layer (S1) being fabricated above a substrate base;
a first electrical insulation layer (G1) being fabricated above said S1 layer;
a spin valve sensor structure being disposed above said G1 layer;
wherein said spin valve sensor structure includes a seed layer being fabricated above said G1 layer, a PtMn layer being disposed above said seed layer and at least one pinned magnetic layer and at least one free magnetic layer being disposed above said PtMn layer; and
wherein said seed layer has an upper surface comprised of Si having a crystallographic surface that differs from the upper crystallographic surface of a deposited Si seed layer, and wherein said PtMn layer is disposed upon said surface of said Si seed layer.

1 9. (original): A magnetic head as described in claim 8, wherein said seed layer includes
2 seed sublayers including Al_2O_3 , NiMnO and Si .

1 10. (original): A magnetic head as described in claim 9 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 10 to 40 Å.

1 11. (original): A magnetic head as described in claim 9 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 20 Å.

1 12. (original): A magnetic head as described in claim 8 wherein said PtMn layer has a
2 thickness of approximately 120 Å.

1 13. (original): A magnetic head as described in claim 8 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 20 Å and said PtMn layer has a thickness of
3 approximately 120 Å.

1 14. (original): A magnetic head as described in claim 13 wherein said spin valve sensor
2 layers include at least one pinned magnetic layer having a composition including CoFe and at
3 least one spacer layer having a composition including Cu , and at least one free magnetic layer
4 having a composition including Co or CoFe .

1 15. (currently amended): A hard disk drive, including at least one magnetic head having a
2 read head portion comprising:

3 a magnetic shield layer (S1) being fabricated above a substrate base;
4 a first electrical insulation layer (G1) being fabricated above said S1 layer;
5 a spin valve sensor structure being disposed above said G1 layer;
6 wherein said spin valve sensor structure includes a seed layer being fabricated above said
7 G1 layer, a PtMn layer being fabricated above said seed layer and at least one pinned magnetic
8 layer and at least one free magnetic layer; and
9 wherein said seed layer includes an Al_2O_3 sublayer, an NiMnO sublayer and an Si
10 sublayer, and wherein said PtMn layer is disposed upon said Si sublayer.

1 16. (original): A hard disk drive as described in claim 15 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 10 to 40 Å.

1 17. (original): A hard disk drive as described in claim 15 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 20 Å.

1 18. (original): A hard disk drive as described in claim 16 wherein said PtMn layer has a
2 thickness of approximately 120 Å.

1 19. (original): A hard disk drive as described in claim 15 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 20 Å and said PtMn layer has a thickness of
3 approximately 120 Å.

1 20. (original): A hard disk drive as described in claim 19 wherein said spin valve sensor
2 layers include at least one pinned magnetic layer having a composition including CoFe and at
3 least one spacer layer having a composition including Cu, and at least one free magnetic layer
4 having a composition including Co or CoFe.

1 21. (currently amended): A hard disk drive as described in claim 15 wherein said Si sublayer
2 has an upper surface having a crystallographic surface that differs from the crystallographic
3 surface of a deposited Si sublayer.

1 22. (currently amended): A hard disk drive, including at least one magnetic head having a
2 read head portion comprising:

3 a magnetic shield layer (S1) being fabricated above a substrate base;

4 a first electrical insulation layer (G1) being fabricated above said S1 layer;

5 a spin valve sensor-structure being disposed above said G1 layer;

6 wherein said spin valve sensor structure includes a seed layer being fabricated above said
7 G1 layer, a PtMn layer being fabricated above said seed layer and at least one pinned magnetic
8 layer and at least one free magnetic layer; and

9 wherein said seed layer has an upper surface comprised of Si having a crystallographic
10 surface that differs from the crystallographic surface of a deposited Si seed layer, and wherein
11 said PtMn layer is disposed upon said surface of said Si seed layer.

1 23. (original): A hard disk drive as described in claim 22, wherein said seed layer includes
2 seed sublayers including Al₂O₃, NiMnO and Si.

1 24. (original): A hard disk drive as described in claim 23 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 10 to 40 Å.

1 25. (original): A hard disk drive as described in claim 23 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 20 Å.

1 26. (original): A hard disk drive as described in claim 24 wherein said PtMn layer has a
2 thickness of approximately 120 Å.

1 27. (original): A hard disk drive as described in claim 23 wherein said Si seed sublayer is
2 fabricated to have a thickness of approximately 20 Å and said PtMn layer has a thickness of
3 approximately 120 Å.

1 28. (original): A hard disk drive as described in claim 27 wherein said spin valve sensor
2 layers include at least one pinned magnetic layer having a composition including CoFe and at
3 least one spacer layer having a composition including Cu, and at least one free magnetic layer
4 having a composition including Co or CoFe.

1 29. (withdrawn): A method for fabricating a magnetic head including a spin valve sensor,
2 comprising the steps of:
3 fabricating a first electrical insulation layer (G1) above a first magnetic shield layer (S1);

4 fabricating a plurality of spin valve sensor layers above said G1 layer, said spin valve
5 sensor layers including a seed layer, a PtMn antiferromagnetic layer, at least one pinned
6 magnetic layer and at least one free magnetic layer;

7 wherein said seed layer includes seed sublayers including Al_2O_3 , NiMnO and Si.

1 30. (withdrawn): A method for fabricating a magnetic head as described in claim 29 wherein
2 said Si seed sublayer is fabricated to have a thickness of approximately 10 to 40 Å.

1 31. (withdrawn): A method for fabricating a magnetic head as described in claim 29 wherein
2 said Si seed sublayer is fabricated to have a thickness of approximately 20 Å.

1 32. (withdrawn): A method for fabricating a magnetic head as described in claim 30 wherein
2 said PtMn layer has a thickness of approximately 120 Å.

1 33. (withdrawn): A method for fabricating a magnetic head as described in claim 29 wherein
2 said Si seed sublayer is fabricated to have a thickness of approximately 20 Å and said PtMn layer
3 has a thickness of approximately 120 Å.

1 34. (withdrawn): A method for fabricating a magnetic head as described in claim 33 wherein
2 said spin valve sensor layers include at least one pinned magnetic layer having a composition
3 including CoFe and at least one spacer layer having a composition including Cu, and at least one
4 free magnetic layer having a composition including Co or CoFe.

1 35. (withdrawn): A method for fabricating a magnetic head as described in claim 29
2 including the further step of etching a surface of said Si sublayer prior to the deposition of said
3 PtMn layer thereon.

1 36. (withdrawn): A method for fabricating a magnetic head including a spin valve sensor,
2 comprising the steps of:

3 fabricating a first electrical insulation layer (G1) above a first magnetic shield layer (S1);

4 fabricating a plurality of spin valve sensor layers above said G1 layer, said spin valve
5 sensor layers including a seed layer, a PtMn antiferromagnetic layer, at least one pinned
6 magnetic layer and at least one free magnetic layer;

7 wherein said seed layer is comprised of Al_2O_3 , NiMnO , Si sublayers, and wherein said Si
8 sublayer is fabricated by depositing it to a first thickness and subsequently etching it back to a
9 final thickness before the fabrication of said PtMn layer.

1 37. (withdrawn): A method for fabricating a magnetic head as described in claim 36 wherein
2 said Si sublayer is fabricated to have a final thickness of from approximately 10 Å to
3 approximately 40 Å.

1 38. (withdrawn): A method for fabricating a magnetic head as described in claim 37 wherein
2 said Si sublayer is fabricated to have a final thickness of approximately 20 Å.

1 39. (withdrawn): A method for fabricating a magnetic head as described in claim 37 wherein
2 said Si seed sublayer is fabricated to have a thickness of approximately 20 Å and said PtMn layer
3 has a thickness of approximately 120 Å.

1 40. (withdrawn): A method for fabricating a magnetic head as described in claim 39 wherein
2 said spin valve sensor layers include at least one pinned magnetic layer having a composition
3 including CoFe and at least one spacer layer having a composition including Cu, and at least one
4 free magnetic layer having a composition including Co or CoFe.